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ABSTRACT

Based on the concept of telecommunications as an effective means for creating a forum on school restructuring, the first video conference in a series of nine focuses on recent research on learning and describes the characteristics of successful learners from three perspectives: cognitive, philosophical, and multicultural. Provided in this guidebook are pre- and post-conference activities, a program evaluation, essays and school-based activities highlighting conference topics, information about other video conferences in the series, computer forums, course credit information, a list of supplementary materials, 39 references and 3 video sources, and a list of 9 regional resources. Bibliographic information is supplied on the conference's presenters. (LMI)

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RESTRUCTURING TO PROMOTE LEARNING IN AMERICA'S SCHOOLS

A GUIDEBOOK

1 The New Definition of Learning: The First Step for School Reform

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EA 022 574

Video Conference 1

THE NEW DEFINITION OF LEARNING:

THE FIRST STEP TO SCHOOL REFORM

Written by:

Beau Fly Jones
Todd F. Fennimore

North Central Regional
Educational Laboratory

Guidebooks and videotapes of this series may be purchased from:

PBS Video
1320 Braddock Place
Alexandria, VA 22314
(703) 739-5038

Guidebooks and additional information are also available from:

North Central Regional Educational Laboratory
295 Emroy Avenue
Elmhurst, IL 60126
(708) 941-7677

Use of This Guidebook

Guidebook Purposes

1. **Before** the video conference, the ***Guidebook*** provides pre-conference activities.

2. **After** the video conference, the ***Guidebook*** contains a post-conference activity and program evaluation.

3. The Essay highlights topics discussed during the video conference. It is followed by two sets of activities: one set relates directly to the essay; the other set is school-based.

4. Finally, this ***Guidebook*** provides information about the remaining video conferences in the series, the computer forums, course credit, and supplementary materials that are available for this professional development program.

Instructions to the Site Facilitator

Pre-Conference Activities
(Allow 30 minutes.)

Before viewing the video conference:

ASK the participants to introduce themselves. If possible, have them form small groups or pairs.

ASK the participants to complete the **Pre-Conference Activities.** These activities are on page 4 and are identified by the hand/pencil symbol. ✍

Post-Conference Activities
(Allow 30 minutes.)

After viewing the video conference:

ASK the participants to complete the **Post-Conference Activity**. This activity is on page 5 and is also marked by the hand/pencil symbol.

ASK the participants to complete the Program Evaluation.

ADVISE participants that workshop activities have been included in this ***Guidebook.*** These activities may be completed in schools, state education agencies, or other educational facilities.

The North Central Regional Educational Laboratory is a nonprofit organization devoted to supporting efforts of the educational community by bridging the gap between research and practice to provide effective instruction for all students. NCREL is primarily funded through the Office of Educational Research and Improvement of the U.S. Department of Education. NCREL and PBS have been presenting national video conferences since 1987.

The PBS Elementary/Secondary Service acquires and distributes high quality, K-12 instructional television programs; provides professional development for educators; delivers electronic and print information services for and about Public Television (PTV) and education; serves as a national advocate for the use of technologies; and tracks developments in national policy for the educational television community.

The PBS Adult Learning Service (ALS) offers college-credit television courses through local partnerships of public television stations and colleges. Since 1981 more than 1,500 colleges in cooperation with 300 stations have enrolled over one million students in ALS-distributed courses. In August 1988 ALS launched the PBS Adult Learning Satellite Service (ALSS) as a direct satellite service for higher education, offering a wide variety of programming.

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Table of Contents

Page

Overview: Professional Development Series 1

Video Conference Activities (for the Site Facilitator: ✍)

Pre-Conference Activities 4
Post-Conference Activity 5
Program Evaluation 6

Essay: The New Definition of Learning: The First Step for School Reform

What Is the New Definition of Learning? 10
Why Do We Need a New Definition of Learning? 20
How Can This New Definition of Learning Be the Starting Point for Restructuring Schools? . . 21

Essay Activities

What Is the New Definition of Learning? 27
Why Do We Need a New Definition of Learning? 28
How Can This New Definition of Learning Be the Starting Point for Restructuring Schools? . . 29

School-Based Activities

Activity 1: Preparing for Fundamental Reform 33
Activity 2: Getting Started 35
Activity 3: Continuing to Grow 37

Additional Information

Program Descriptions 38
Computer Forums 40
Materials 42
Course Credit Information 43
Local Involvement 43

References and Resources

Bibliography 45
Video Sources 47
Presenters' Biographical Information 48
Regional Resources 50

Order Form 51

OVERVIEW: PROFESSIONAL DEVELOPMENT SERIES

NCREL's Goal: A Forum on Restructuring Schools

The concept of educational laboratories emerged during the War on Poverty in the 1960s. Education was viewed as crucial to anti-poverty efforts, but the inability of policymakers, researchers, and practitioners to communicate with one another about effective strategies and practices was a significant obstacle to substantial educational improvement. One of the reasons Congress created the laboratories was to promote dialogue about promising practices among these diverse actors. Today there are nine federally-funded regional educational laboratories in the country working to help educators and policymakers improve the quality of education by applying research findings to educational practice.

NCREL sees telecommunications as an effective vehicle for creating a forum on restructuring schools that brings together practitioners, policymakers, and researchers so that they can enrich each other's perspectives. Telecommunications can bridge geographic separations and create networks of common stakeholders in restructuring efforts.

However, the satellite transmission itself does not create a forum. How the telecommunications event is structured is a crucial factor in determining the effectiveness of the forum. This professional development series was designed to:

- Focus the movement for restructuring schools on the fundamental issues of schooling: learning, curriculum, instruction, and assessment
- Provide opportunities for participants to interact with researchers, teachers and administrators, and policymakers in a structured thinking process
- Help apply new ideas and develop local expertise
- Promote a broad range of local and electronic networking
- Help educators prepare students to meet the new roles and opportunities of a profoundly changed and changing society
- Provide a framework for organizing what research says about fundamental change

Components of the Professional Development Series

Four components of this professional development series enhance the potential for creating a national forum:

1. Video conferences
2. Computer forums
3. Print materials
4. College credit

See Additional Information, page 37.

Video Conference Titles and Dates (1990)

1. The New Definition of Learning: The First Step for School Reform (February 14)
2. The Thinking Curriculum (March 21)
3. The Collaborative Classroom: Reconnecting Teachers and Learners (April 26)
4. Multidimensional Assessment: Strategies for Schools (May 24)
5. Schools as Learning Communities (June 6)
6. Many Roads to Fundamental Reform: Getting Started (June 20)
7. Many Roads to Fundamental Reform: Continuing to Grow (July 11)
8. The Meaning of Staff Development in the 2lst Century (July 25)
9. Reconnecting Students at Risk to the Learning Process (August 8)

Content

The core message of the video series is this: A fundamental restructuring of schools should be driven by a new vision of learning, a vision which transforms all dimensions of schooling. Thus, the first video conference focuses on the new research on learning. The next three video conferences discuss the cognitive and social environments that can be created in classrooms to support meaningful learning. The last five video conferences explore changes that can be made in the social organization of schools to support these classrooms.

VIDEO CONFERENCE ACTIVITIES

Pre-Conference Activities

Post-Conference Activity

Program Evaluation

10B

Pre-Conference Activities

INSTRUCTIONS TO SITE FACILITATOR:

ASK the audience to form groups of 3 to 5 people. GUIDE them through the Pre-Conference Activities.

Activity 1: What is the video conference about? (Allow 15 minutes.)

SURVEY the titles, subtitles, overview information, biographies, and activities in this guide to PREDICT what you think this video conference is about. WRITE your predictions below. SHARE your predictions with a partner or group, if possible.

Activity 2: What are your goals for viewing this video conference? (Allow 10 minutes.)

WRITE your goals for viewing Video Conference 1.

Post-Conference Activity

INSTRUCTIONS TO SITE FACILITATOR:

ASK the audience to form groups of 3 to 5 people. GUIDE them through the the Post-Conference Activity.

Activity: How might this video conference help you define your vision of meaningful learning? (Allow 15 minutes.)

DESCRIBE some things you do in your classroom that promote your vision of meaningful learning. Share your responses with a partner or group.

1. What do you think were the three most important points made in this video conference?

2. Is the "new" definition of learning new or simply recast? Explain.

3. Has this video conference enriched or changed your views about learning? Explain.

4. DESCRIBE the strengths of your school that would facilitate making changes to promote learning.

11 B

Program Evaluation

Please fill in the appropriate circles on your answer sheet using a #2 pencil.

PART ONE: Your opinions about the relevance and usefulness of the video conference

	Strongly Agree <——> Strongly Disagree
1. The topic of this video conference is relevant to my needs and interests.	A B C D E
2. The content of the video conference is appropriate to the type of community I live in and its schools.	A B C D E
3. I learned a great deal from this video conference.	A B C D E
4. The video conference enriched the way I look at education.	A B C D E
5. The video conference may influence the way I educate (or involve myself in education as a parent or community member).	A B C D E

PART TWO: Questions about activities before, during, and after the video conference

6. I am participating in this video conference:
   A - Alone
   B - With colleagues (not in a team)
   C - In a school-based team
   D - In a district team
   E - Other

7. Did the site facilitator conduct a **pre-conference** activity?
   A - Yes
   B - No

8. Did the site facilitator conduct a **post-conference** activity?
   A - Yes
   B - No

9. What activites have you planned as follow-up to the video conference?
   (Please indicate **all** that apply)

   A - Read the ***Guidebook***
   B - Do the activities in the ***Guidebook***
   C - Read ***Selected Readings***
   D - Debrief in our school setting
   E - Conduct workshops

PART THREE: Your opinions about the content and delivery of the video conference

	Too Short <——> Too Long
10. How would you judge the overall length of the video conference?	A B C D E
	Too Little <——> Too Much
11. How would you evaluate the amount of information presented in the video conference?	A B C D E

Please evaluate the following components or aspects of the video conference (questions 12-18):

	Poor <——> Excellent
12. Pre-conference activity	A B C D E
13. The video conference itself	A B C D E
14. Post-conference activity	A B C D E
15. Presentations	A B C D E
16. Interaction with presenters	A B C D E
17. Pre-taped segments	A B C D E
18. Interaction with video conference participants at your site	A B C D E

	Strongly Agree <——> Strongly Disagree
19. The technical quality of the video conference was good.	A B C D E
20. The video conference site was conducive to learning.	A B C D E
21. I would recommend this video series to others.	A B C D E

PART FOUR: Information about you

22. **Educators Only:** Please indicate on your answer sheet your school category.

A - Elementary school
B - High school
C - District
D - College/University
E - State/Intermediate Agency

23. **Educators Only:** Please indicate on your answer sheet your position.

A - Teacher
B - Administrator
C - Staff
D - Professor

24. **Non-Educators Only:** Please indicate the primary group you represent.

A - Parents
B - Community
C - School Board
D - Business
E - Social Services

25. Circle the best description of your district.

A - Urban
B - Suburban
C - Rural

26. On your answer sheet, please write in the state in which you live.
(Use the space marked "comment 1" on your answer sheet.)

27. How did you learn about this video conference?

(Please indicate **all** that apply)

A - PBS publicity
B - NCREL brochure
C - State department of education
D - Intermediate service agency
E - Professional organization newsletter

28. Please share any other comments about the video conference and suggestions for future video conferences.
(Use the section marked "comment 2" on your answer sheet.)

Essay

THE NEW DEFINITION OF LEARNING:

THE FIRST STEP FOR SCHOOL REFORM

What Is the New Definition of Learning?

Why Do We Need a New Definition?

How Can This New Definition Be the
Starting Point for Restructuring Schools?

What Is the New Definition of Learning?

"Old" and "New" Definitions of Learning

Educators know when they see meaningful learning in a classroom. The students are actively engaged in challenging tasks that have applications to their lives. They do not settle for rote understandings. They truly understand the subject matter because they can apply their knowledge to new situations. They see learning as an integral and enriching part of their everyday lives, something highly enjoyable and intrinsically motivating. Their teacher or teachers flow in and out of their activities, sometimes listening, sometimes redirecting their thoughts, sometimes coaching or explaining.

This vision of learning is not "new" in two respects. First, successful learners of today probably have many of the same attributes as those of yesterday. Second, recent research on learning reflects common sense visions of learning with historical roots in earlier philosophies of education such as those of Socrates, Dewey, Piaget, and Vygotsky. These earlier philosophers/educators shared a rich vision of learning. Love of learning was nourished by teachers. The locus of learning was the learner, and the potential for what children could learn was a frontier.

The New Definition of Learning: Overview

Today, the dominant metaphor for learning in most schools is industrial. This suggests that the business of learning is additive and largely controlled by persons outside the learner. Schooling becomes an assembly line process where the objectives define what the end product of learning will be. The learner is a recipient. The teacher is an information giver. The principal is a manager who oversees the building, equipment, and people involved in the production process.

In contrast, recent research has generated some new terms such as meaningful learning, problem situated learning, reflective education, and cognitive apprenticeship. These terms suggest again that the essence of successful learning is internal to the individual, group, or community. The learner works hard to link the new information to prior knowledge and so constructs mental models and explanations. Further, the context of learning has come to be described as collaborative, diversified, and rich in resources and opportunities for learning.

Successful learning necessarily involves authentic tasks, objectives that engage the mind, and a focus on using the information that is acquired.

These new descriptions of learning are important politically. In the past, it was generally assumed that only the brightest of our nation's youth would be likely to have the attributes of successful learners, and that precious few public schools could provide an optimal instructional environment to foster successful learning for the majority of youth. Now, more and more people assume that research can help us identify the characteristics of successful learning and learning environments, that the performance of low-achieving students can be significantly modified, and that schools can make a positive difference. Equally important, schools can use current research to work toward providing better learning environments for adult members of the learning community. This includes providing support services needed for students and their families for meaningful learning to take place.

Current research is providing a broader view of learning. A number of research centers and researchers are studying how children learn and what helps and hinders their learning. In this video conference, three bodies of research are featured that help contribute to a broader definition of learning: philosophical, cognitive, and multicultural. Together, they help define learners philosophically, intellectually, and culturally. That is, meaningful learning takes place when teachers and students are aware of all three of these dimensions of learning. Through visits to actual school settings, viewers are able to see how learning is nourished in these three areas in various real-world settings.

Research on Meaningful Learning

Philosophical Perspectives

Philosophical perspectives focus on how learners develop assumptions about what sorts of persons they want to become and what sort of world they want to inhabit. Fundamental to philosophical thinking is knowing how to verify the validity of available information and develop criteria for making judgments that are essential to thinking. Equally important is developing the disposition to challenge and defend foundations of beliefs and judgments.

A Focus on Higher Order Thinking

Philosophical reflection engages many higher order thinking skills or strategies. Indeed, much effort in the thinking skills movement focuses on defining principles of logic and fallacies of reasoning such as making generalizations without adequate information or with biased information. Accordingly, philosophers tend to develop extensive taxonomies of strategies and fallacies. It is this aspect of philosophical thinking that many educators refer to as critical thinking. Yet this is only one aspect of philosophy. Philosophers increasingly stress the importance of creative thinking such as defining a problem in a new way or changing the problem, looking at an issue from an unusual perspective, and internalizing the process of reflective inquiry to apply to all subject areas.

Community of Inquiry

A philosophical perspective on learning also stresses the importance of creating a community of inquiry in the classroom. Students in such communities expect each other to be thoughtful and reflective, listen to each other with respect, reflect and build on one another's ideas, demand evidence to support opinions, assist each other in drawing out the implications of what has been said, identify and challenge the assumptions of arguments, and question one another's definitions. Indeed, some philosophers argue that such inquiry is a moral imperative in a democratic society. Without it, we are prisoners of our own beliefs, unable to judge right and wrong with integrity, unable to make informed judgments. Philosophers want learners to be philosophical in the strong sense with a passion for reflection and inquiry pervading their thoughts and their lives.

Examples

In considering examples of philosophical thinking, it is vital to understand that engaging students in classifying activities or having them identify fallacies of reasoning in prefabricated materials is not philosophical thinking in the strong sense. Rather, examples of philosophical thinking involve making observations, classifying, challenging premises, and the like for the purpose of making judgments about oneself or the world. Thus, students might compare and contrast people and robots for the purposes of understanding something about themselves as human beings. What is vital is that the students puzzle and wonder about the essence of humanity.

Presenter:
Matthew Lipman

While most people associate such intellectual moves with college level philosophy classes, Matthew Lipman, Director, Institute for the Advancement of Philosophy for Children, has helped elementary children learn how to engage in philosophical discourse with their peers. Lipman's extensive research has established that even very young students can attain philosophical understanding that the world is ambiguous and mysterious, and that purposeful dialogue with others can help illuminate the "blooming, buzzing universe." Further, NCREL believes that Lipman's vision of learning as a community of inquiry is important for schools to consider as they fashion their own visions of learning. (See Presenters' Biographical Information on page 48.)

Cognitive Perspectives

Cognitive perspectives on learning come from cognitive psychology, educational psychology, psycholinguistics, computer sciences, expert teaching, and related fields. Although these perspectives developed largely independently of philosophical perspectives, both include a focus on higher order thinking, including strategic thinking or metacognition, collaborative learning, and a passion for inquiry. They differ primarily in focus of inquiry and the methods of study associated with respective lines of inquiry. Whereas philosophers strive to define what to do or believe, cognitive perspectives focus on such questions as understanding how students acquire and use knowledge in disciplinary contexts such as math and reading, what is involved in self-regulated learning, and what conditions produce optimal learning.

Importance of Knowledge

Cognitive perspectives of learning emphasize that proficient learners have extensive subject matter knowledge. Proficient learners use this content knowledge to interpret new situations, define and solve problems, make judgments, classify information, and reason. Further, they represent and organize what they know in terms of patterns and principles. They are aware when the disciplinary knowledge conflicts with their prior knowledge, and they strive for conceptual change. These and other behaviors make their knowledge assessable; they can apply their knowledge to new situations. Others emphasize that proficient learners develop a repertoire of thinking/learning strategies, including strategies for critical and creative thinking and metacognitive strategies for monitoring their learning.

Self-Regulated Learning and Strategic Thinking

Self-regulated learning from the cognitive perspective involves not only setting learning goals, but also monitoring the process of learning, thinking strategically about how to accomplish a task, assessing what is learned, and determining the next steps for learning. Even young children are capable of self-regulated learning. Children in the Perry Preschool Project, for example, begin their days making decisions about what they would like to accomplish during the day, monitor how well they implement plans, make appropriate modifications, and assess their learning at the end of the day. Proficient learners also develop a repertoire of learning strategies such as elaborating and summarizing, as well as strategies for critical and creative thinking.

Authentic Tasks and Context

Cognitively demanding learning requires more than recalling facts, reciting definitions, or performing rote calculations. According to cognitive perspectives, the essence of learning is linking new information to prior knowledge and making connections to real-world situations or contexts. In fact, cognitive psychologists increasingly emphasize this contextual aspect of successful learning, arguing that learning must be "situated" in authentic tasks such as having real audiences for one's writing and applying a concept or process to solve a real-world problem. Where possible, tasks in school should be aligned with tasks and experiences that students encounter out of school. In this regard, dialogue, including self-questioning and collaboration with others, is critical in the process of meaningful learning.

Examples

A classroom with a thought-provoking atmosphere is "abuzz" with students sharing ideas, solving problems, probing an issue, exploring an argument, or looking at different perspectives. Children at Sabin Elementary School in Chicago, for example, have the opportunity to describe their experiences at the Science Museum to specially trained mothers serving as scribes. Later these scribes will work with the children to convert the stories into brightly colored books to share with others in the class. Or consider a high school example. At Harbison High School in Orlando, Florida, students explore the meaning of literature through a historical perspective. Before studying each work of literature, students learn the history of the period as they learn the characteristics of the genre. When they read the text, they relate the content back to the historical setting.

Learning Environments for Low-Achieving Children

Cognitive psychologists generally believe that attributes of successful learning such as strategic thinking and self-regulated learning can be taught to low-achieving students, given appropriate learning environments. There is considerable debate about exactly what conditions maximize learning for low-achieving students. However, most agree that providing such students with authentic tasks and problems with real-world applications, high expectations, and interaction with teachers and peers who are themselves good thinkers may have substantial benefits. They also emphasize the importance of dialogue with others. It is through dialogue that parents, teachers, and peers model and mediate learning. It is also through dialogue and self-dialogue that students formulate hypotheses and questions, puzzle, establish criteria, make a wide range of choices and judgments, negotiate settlements, and resolve disputes.

Presenter:
Lauren Resnick

Lauren Resnick, Director, Learning Research and Development Center, University of Pittsburgh, has spearheaded much of the research in the cognitive perspective. Among other things, her vision of learning seeks to align activities in schools with real-world tasks and learning environments outside schools. Toward this end, she emphasizes the concept of cognitive apprenticeships developed by Allan Collins, John Seeley Brown, and others. According to this concept, meaningful learning occurs when students tackle the complex tasks engaged in by adults in a given area, gradually building expertise with experience; meaningful learning also occurs when teachers serve as coaches, at first highly supportive, then gradually encouraging independent learning. (See Presenters' Biographical Information.)

Multicultural Perspectives

Multicultural perspectives both reflect and extend philosophical and cognitive perspectives. Recent research focusing on multicultural education is based on two fundamental assertions: (1) all students can learn, and (2) students learn best when their learning tasks are built on real experiences and meanings from the students'own lives. Learning is an active process of inquiry, and the construction of meaning must begin with what the child already knows. What is distinctive about multicultural perspectives

is the urgency of applying these principles to non-dominant or minority children. Too often schools do not legitimize the knowledge or experiences these children bring to school. Instead, schools are most likely to label these childen as failures because their backgrounds — usually their language and culture — are seen as inadequate preparation for learning. According to multicultural perspectives, every culture brings habits of thought, resources, and contexts which have built into them vehicles that promote learning and inquiry. Accordingly, children of any culture can and should have curriculum and instructional practices that draw from that culture.

The Need to Build on Background Knowledge

Multicultural perspectives insist that language and culture play critical roles in learning. In the past, old models of learning tried to erase or ignore a minority child's cultural and linguistic background. Today's researchers, however, realize that this background represents the cornerstone of the child's prior knowledge. It is the foundation upon which all other learning is built. It is therefore crucial to link new learnings to the culture and experiences of the students. This means not only respecting and building on the knowledge that children bring to school as legitimate contributions to classroom dialogue, but, also working hard to use the familiar experiences of students as the starting point for learning concepts and principles.

Implications for School Reform

This line of research has some important implications for school reform. First, schools are presently organized so that one's cultural background largely determines one's access (or lack of access) to educational opportunities and resources. For many non-dominant or minority children, this organization means tracking in low-level classes and virtual exclusion from high-level content and instruction. If schools restructure so that their curricula and instruction build on the language and culture of all children, these exclusionary and discriminatory practices will end. This means that schools must pay more than lip service to the inclusion of children of all groups in thoughtful learning activities.

Second, schools must make multicultural education a part of the learning objectives for all students. Belief in the efficacy and value of diverse cultures — not just those of the dominant group — must pervade all curricula and all instructional practices. This means making both students and educators aware of the strengths of diverse cultures and explicity teaching students to value individual differences in the classroom. However, changes such as these require a complete re-thinking of the school culture and organizational structure, as well as of learning objectives and instructional techniques.

Presenter:
Hubert Dyasi

Hubert Dyasi, Director of the City College Workshop Center in New York, is one science researcher who has linked multicultural research to the reform of teaching and learning in schools with a focus on science. Following the work of his colleague Lillian Weber, his program at the Workshop focuses on restructuring classroom time and space so that children are actively engaged with their local environment in Harlem, and instruction builds on what the children already know.

Common materials and technologies (elevators, bicycles, buildings) and ordinary observable phenomena (swinging, the smell of sea water, blowing of soap bubbles) become entry points for children to learn science. Additionally, Dyasi argues that concepts and principles are accessed through language use and that minority children must be proficient in "the language of currency." Thus, a major task of school reform is to promote dialogue about the phenomena under study. (See Presenters' Biographical Information.)

Some Research-Based Assumptions About Learning

The three bodies of research on learning featured in this first video conference help broaden current definitions of learning. Often what students are thought to learn or master in traditional definitions of learning is subject matter. Yet we know that all students, regardless of age, come to learning experiences with cognitive, philosophical, and cultural strengths and needs. They also learn about themselves through reflection, about how to think about others different from themselves, and about learning itself.

Learners and teachers who are aware of these three dimensions of learning come to the educational process with a different set of assumptions, compared to those with traditional views of learning. They understand that successful learners are different from less proficient learners in important ways that are learned through social and cultural experiences inside and outside the classroom.

Characteristics of the Successful Learner

When we look back at what each perspective has to say about successful learning, four characteristics are outstanding: successful learners seem to be knowledgable, self-determined, strategic, and empathetic. These characteristics form a **beginning list** of research-based assumptions about meaningful learning.

Knowledgable Successful learners have amassed substantial knowledge of content and can use it to think with fluency and authority. They can define and solve problems critically and creatively. They have a strong sense of what they believe and why, and they constantly evaluate the quality of information they receive and produce. They devote substantial time to reflecting and puzzling. They are aware of the strengths and needs of others, including those different from themselves. They value diversity and work hard to be fair-minded.

Self-Determined Successful learners consciously use and expand the tools they have to engage in meaningful learning. They are highly motivated and feel they have the power to promote their own development. They feel good about themselves as learners, confident that they can succeed. They have firm beliefs about the value of hard work and the effects of it on their success. Successful learners persevere in the face of difficulties. Successful learners also regard the world as full of opportunities to learn. They consider choices, examine reasons, and observe the consequences of their actions.

Strategic Successful students have a repertoire of effective strategies for learning various subjects, for thinking about and controlling their own learning, for detecting errors and fallacies in their thinking and the thinking of others, for problem solving and decision making, and for thinking creatively. Using these strategies, they can organize what they know and construct mental models, plan their study time, and decrease anxiety. They can monitor their comprehension and problem solving, constantly pausing to compare the new information to prior knowledge, check what they have learned and what they need to review, and summarize. Successssful students learn to orchestrate these strategies in a dynamic flow as they move in and out of different tasks and phases of learning.

Empathetic Successful students often recognize that much of their success involves their ability to communicate with others. However, they are also able to view themselves and the world through the eyes of others. This means not only examining one's beliefs critically, including beliefs and judgments about the self, but also examining the beliefs and circumstances of others, keep ing in mind the goal of enhanced understanding and appreciation. These interpersonal skills are particularly important in understanding and appreciating other cultures. Meaningful learning involves learning how to identify the strengths of others as well as to be supportive in give-and-take relationships. Successful students value sharing experiences with persons of different backgrounds as enriching their lives.

Learning as an Interaction

While we can all strive to acquire such characteristics, it is also clear from all three research perspectives that they are unlikely to flourish in traditional schools. If we are to help our nation's students to achieve these and other characteristics of learning, we must recognize that meaningful learning involves much more than the learner. Learners do not become successful by engaging in meaningless tasks that are decontextualized and fragmented. To the contrary, meaningful learning is associated with authentic tasks, meaningful interaction with others, sustained thinking, and quality instruction. We really cannot strive for meaningful learning without considering the content of the curriculum or the quality of instruction. Thus, meaningful learning ultimately involves an interaction of the learner, the content, and the context, including both the classroom context as well as the social and cultural context of the learner. These components of learning are explored in Video Conferences 2 (The Thinking Curriculum) and 3 (The Collaborative Classroom).

Why Do We Need a New Definition of Learning?

Many educators believe that the perspectives above are essential to learning — we have always wanted students to really think about what they are learning, reflect with other students on the significance of what they learn, and understand other perspectives to enrich their own.

Limited Access to Meaningful Learning

Educators, government agencies, businesses, and parents are concerned that too many students do not have access to meaningful learning (e.g., A Nation At Risk). The U.S. Department of Education has made several pronouncements that education is in a state of crisis — a crisis so pervasive and profound that only fundamental restructuring of schools will serve as a solution. Statistics from the National Assessment of Educational Progress (NAEP) indicate that most students are mastering the "basics" of decoding words and carrying out rote calculations, but they do not know how to solve problems involving a number of steps for solution and are unable to compose a persuasive paragraph.

Businesses are finding that their employees do not possess the skills to be successful on the job. For example, the National Alliance of Business (NAB) has called for school learning more in line with new business needs. Parents are concerned that their children may drop out of school and be unprepared to assume a productive adult role. Many parents find that even if their children graduate from high school, they cannot land challenging, rewarding jobs unless they pursue post-secondary education.

Underlying all these concerns is the fundamental concern that students are not being prepared for a world that is becoming more globally interdependent, technologically sophisticated, and information intensive. Our nation is alarmed that we are slipping so far behind other countries in educational achievement, and that this is happening at a time when having a well-educated workforce is vital for the United States to maintain its competitiveness.

Teaching and Learning for America's Future

Thus, across the nation, there is a cry for a closer alignment of schools and the needs of our society. To meet these needs, many researchers, educators, and economists call for fundamental changes in the what, when, and how of schooling. Berryman (1989), for example, argues that the "what" should focus on good academic skills, higher order thinking, self- directed learning, teamwork abilities, and the ability to resolve conflict. In terms of the "when," there is increasing consensus that these skills should be taught early and throughout the school years. In terms of "how" these skills should be taught, Berryman, Resnick (1987), and others call for authentic tasks that are more closely aligned with the teamwork and challenges in real-world problem solving and learning situations. The purpose of this video series is to explore how schools can change to promote meaningful learning and meet the needs of both the nation and individual students.

How Can This New Definition of Learning Be the Starting Point for Restructuring Schools?

An Agenda for School Reform

Educators hear the words "school improvement" and "restructuring" frequently. Educators and those with an interest in education use these words in different contexts, with different meanings, and for different reasons. From NCREL's point of view, the difference between school improvement and school restructuring is a

matter of vision. School improvement suggests incremental changes in selected areas (e.g., the math curriculum, reading instruction, assessment in science). In contrast, school restructuring advocates major structural changes in schools. For example, some think of restructuring primarily as decentralizing school governance, while others emphasize the involvement of the community, businesses, and parents, as well as teacher improvement. At NCREL, we think restructuring involves all these elements, but emphasize that the restructuring process begins with the guiding and overarching goal of **meaningful learning for all students**.

In thinking about restructuring and working with schools to restructure, we have concluded that fundamental restructuring has a dual agenda. The first goal on the agenda is to develop a strong vision of learning, curriculum, instruction, assessment, and the social organization of the schools. The second goal is to make comprehensive changes in schools to implement this vision. Restructuring is a comprehensive set of changes in schools, designed to promote meaningful learning for all learners.

Schools undergoing restructuring will begin to reflect new patterns of interaction among teachers, administrators, students, parents, and community members. These interactions center on a vision of meaningful learning that each school has developed for itself. Teachers create environments that promote meaningful learning; school structures and processes support these classrooms; and the community becomes a partner in promoting such learning in the school.

Learning-centered schools are active, engaged, and participatory. Teachers work with other teachers to deliver an interdisciplinary curriculum and to share strategic teaching techniques that promote collaboration in the classroom. Students assist other students in thinking through problems and solutions. Community members come into the school to share their expertise. Students go outside the school to plan for and implement community-based projects. Administrators and teachers collaborate on how to apply new teaching and learning research and practice to the ongoing renewal of their school. These new interactions, we believe, reflect both the spirit and substance of restructured schools.

Goals of Restructured Schools

We at NCREL believe that restructured schools achieve the following goals:

- Promote expanded and enriched learning
- Build a vision of the school that reflects and reinforces this learning
- Promote ongoing learning for all members of the school community, not just for students
- Provide opportunities for parents and community members to become both learners and educators
- Institute a collaborative and ongoing process of restructuring with frequent assessment of the process

Fundamental Restructuring in Urban and Rural Contexts

Rural and non-rural schools may engage in the process of fundamental restructuring in very different ways. Below are descriptions of two schools that illustrate these differences. Staff from both schools will be featured in Video Conference 1.

Urban Example

South Division High School, Milwaukee Public Schools. A few years ago, this school was suffering from a range of problems that often characterize inner-city schools: high dropout rates, attendance and discipline problems, problems associated with drugs and gang wars, and so on. The first principal applied the best principles from the effective schools movement and within a short time, the school was turned around in many ways. It was cleaned of all graffiti, terms were negotiated with gangs to make the school a neutral territory, and over time the school climate changed dramatically. Students spoke more amicably to each other, to teachers, and even to visitors in the halls; teachers went out of their way to help visitors.

Need for Fundamental Restructuring

The problem was that while these changes may have been necessary preconditions for fundamental restructuring, they were ultimately incremental. Many of the students were still failing at most of their subjects. When John Hays became principal, he was determined to promote learning in the school. Toward that end, he worked with a small Task Force consisting of several teachers, local parents, faculty from Milwaukee Area Technical College, University of Wisconsin-Milwaukee, Alverno College, and a member of the NCREL staff.

Forging a Vision of Learning

Over the summer of 1988, this Task Force began to restructure to promote learning. They developed a vision of learning based in part on Alverno's definition of learning and in part on Dale Parnell's (1986) concept of the broad technician, a concept which is highly consistent with the definition of learning here. Ultimately, this vision of learning was reflected in a curriculum that involved a limited number of broadly conceived skill objectives over the years of high school. Content objectives were organized in terms of academic, work, and community goals for the first two years of high school and disciplinary subjects the remaining two years. Great care was taken to support dropouts by placing them initially in programs designed to address their social needs and to accelerate learning.

In spite of these pioneer efforts to develop a very sophisticated and carefully crafted plan, there was considerable resistance to it when it was unveiled in the fall of 1988. Through perseverance, increased involvement of staff members on school task forces, staff development, additional resources, and a strong vote of confidence from the central administration and the school board, this resistance has begun to dissipate. Although it is still too early to demonstrate the effectiveness of this plan on student achievement, there are obvious and significant effects on the roles and relationships of the teachers. John Hays and Deborah McGriff, Deputy Superintendent, describe this transformation at the video conference. It is a wonderful story of ordinary people doing extraordinary things.

Rural Example

Alma Public Schools, Alma, Michigan. This district consists of three elementary schools and two high schools drawn from seven townships. The superintendent, William McKinstry, is driven by two related goals. First, he did not want his school program to consist of a patchwork of projects; rather, he wanted a cohesive, districtwide approach to which the whole staff was committed. Second, he believed that schooling must address the needs of the whole person.

Systemwide Changes

To accomplish these goals, he initiated a systemwide change process using the Outcomes Driven Developmental Model. This model seeks to integrate holistic reasoning into curriculum, instruction, and assessment — indeed the whole educational system. Initial phases involved developing a 15-item belief statement and student outcomes that say, "Here is where we are and where we are headed."

Additionally, the school has defined learner outcomes in six areas: self-esteem for the student; process skills; cognitive learning; showing concern for others; emotional, social, and physical well-being; and self-directed learning. The school also strives for curriculum alignment so that objectives are aligned with available instructional resources and assessments.

The School as a Community

Each school has a school improvement team as well as individual school plans, based on research. Members of these teams have spent considerable time working with consultants in professional workshops and visiting other schools using this model. And there is much effort to use data from school surveys and student achievement assessments. McKinstry believes that teachers and administrators must feel they are part of the decision-making process, and much effort is made to help school staff feel a sense of belonging and commitment to the school as a community.

Students at Risk

The school system also has very strong policies regarding students at risk. Under McKinstry's leadership, the district seeks to eliminate pullout programs and use funding to provide services in classrooms to students who need it. Every effort is made to provide enriched learning environments for all students. However, for those students who drop out, there is an alternative school. Outstanding features are that the students maintain the building and grounds themselves, teachers teach only four days a week with the fifth day for planning, about 50 percent of the time is spent on building students' self-esteem, and the curriculum focuses on content.

ESSAY ACTIVITIES

What Is the New Definition of Learning?

Why Do We Need a New Definition of Learning?

How Can This New Definition Be the Starting Point for Restructuring Schools?

What Is the New Definition of Learning?

Activity: What is your vision of meaningful learning?

IMAGINE meaningful learning experiences you and others have had. RECALL information and beliefs you already have along with information and ideas from the video conference and this ***Guidebook*** to write what you think learning is. DEVELOP a list of specific beliefs that describe what you think about meaningful learning. Then, COMPARE and DISCUSS your vision with a partner or your group. Finally, SELECT 8-12 statements you believe best capture your ideas about what meaningful learning is.

Meaningful learning is...

Why Do We Need a New Definition of Learning?

Activity: What are the future needs of students and how do schools meet those needs?

THINK about the lives today's students will lead five years after they leave high school. What do you envision students doing? What knowledge will they need to be critical, involved citizens; productive workers; and active, supportive members of families and ethnically diverse communities? What skills will they need? Then THINK about the extent to which your school now fulfills these needs. COMPARE your answer with a partner or your group.

Knowledge and skills students will need	Your school's ability to meet those needs

How Can This New Definition Be the Starting Point for Restructuring Schools?

Activity 1: How is this reform different from others?

"But, I do this already!" "Our school did reciprocal teaching last spring." How often we hear such comments in connection with school reform. Part of the problem with any new initiative that builds on existing strengths is that some elements of the reform really <u>are</u> "old." Nevertheless, it is important to determine in your own mind how restructuring to promote learning is "new." Keeping this in mind, ANSWER the questions below. (USE information from the ***Guidebook*** and your prior knowledge.)

How is fundamental restructuring different from:

1. School improvement?

2. Site-based management?

3. Teacher empowerment?

4. Parental involvement?

5. Learning by doing?

6. Open education?

Activity 2: What discrepancies are there between your vision of learning and realities in your schools?

REVIEW your vision of learning (Activity, page 26) and THINK about its implications for the dimensions of schools listed below by answering the seven questions. This activity is more effective when it is done by a group; however, it can be done individually if necessary.

1. Is your vision of learning consistent with the curriculum now in place in your school? Explain why or why not.

2. Is your vision of learning consistent with typical instruction in your school? Explain why or why not.

3. Is your vision of learning consistent with the ways students are assessed in your school? Explain why or why not.

4. Is your vision of learning consistent with ways students and community members interact? Explain why or why not.

5. Is your vision of learning consistent with staff development in your school? Explain why or why not.

6. Is your vision of learning consistent with the support teachers and administrators provide each other in your school? Explain why or why not.

7. Is your vision of learning consistent with policies and practices for students at risk in your school? Explain why or why not.

SCHOOL-BASED ACTIVITIES

Activity 1: Preparing for Fundamental Change

Activity 2: Getting Started

Activity 3: Continuing to Grow

Note: The activities in this section are sequenced to address different levels of involvement in the restructuring process. Begin by selecting the activities best suited to your school.

Activity 1: Preparing for Fundamental Reform

Part A: What possibilities and constraints can be identified from environmental scanning?

An important first step in restructuring is environmental scanning. Its purpose is to examine local conditions and trends that have a bearing on school restructuring. The areas listed on the side of the chart are especially important. The task force may use the chart to organize information gained from environmental scanning.

	Nature of the Changes	Opportunities for Restructuring	Constraints against Restructuring
Economic changes			
Changes in the amount and types of information you have to deal with			
Population changes			

Part B: What are our resources for making fundamental changes?

In the spaces below, identify resources in your school to support restructuring.

1. Funding

2. Time for meetings

3. Research information and materials

4. Trained staff (internal and external)

5. Community or business partners

6. District and state policies and waivers

7. Support from parents

Activity 2: Getting Started

Part A: What definition of meaningful learning fits your school?

This activity works best when teachers and administrators from different departments and grades work together. Your goal is to develop a definition that reflects a **consensus** among school members on a limited number of learning objectives, not just a laundry list of everyone's opinion. Books and articles listed in the Bibliography may help you. Avoid settling on a definition after just one or two meetings. A better approach is to maintain a continuing dialogue among teachers on what meaningful learning is and what its manifestations are.

Our tentative or working definition of meaningful learning is...

Part B: How can a vision of meaningful learning guide restructuring?

A vision of meaningful learning provides a long-range goal that enables you to "map backwards" from student learning to the school, thus ensuring that everything that happens in your school is directed to make that vision a reality.

1. What curriculum materials would support your vision of learning?

2. What principal and teacher roles would support your restructured environments?

Activity 2 (Continued)

3. What school organization and grouping practices would support restructuring?

4. What community relations would support your school's vision of learning?

5. What staff development activities would be needed?

6. What policies and practices for students at risk support your school's vision of learning?

Activity 3: Continuing to Grow

Part A: How would you define your restructuring efforts to date?

Are your efforts to restructure currently fragmented (involving changes in a few selected areas, such as reading or math) or fundamental (involving comprehensive plans or changes to promote meaningful learning for all students)? Explain.

Part B: How can you use information from the video series to enhance your efforts?

Below are some suggestions for using the information in the video conference series. Check those below which are feasible for your school.

- ☐ Use the information in this video series and ***Guidebook*** to reflect on and evaluate your efforts to date
- ☐ Conduct workshops in this ***Guidebook***
- ☐ Become a member of the Computer Forum for this series
- ☐ Distribute copies of the ***Selected Readings*** and this ***Guidebook*** to other members of your school
- ☐ Contact others in your area for collaboration and support (laboratories, colleges and universities, intermediary agencies, business groups, community members)
- ☐ Visit schools that have restructured to promote learning
- ☐ Invite staff from restructured schools to visit your school for consultation and training
- ☐ Develop a mission statement or common beliefs for all staff members focused on restructuring to promote learning
- ☐ Develop a comprehensive and systematic plan to restructure to promote learning
- ☐ Use the information in the video and ***Guidebook*** to define future efforts.

ADDITIONAL INFORMATION

Program Descriptions

1. The New Definition of Learning: The First Step for School Reform - The point of departure in thinking about restructuring is to consider a new definition of learning based on recent research in cognitive sciences, philosophy, and multicultural education. Positive attitudes toward learning, toward oneself, and toward others; a strategic approach to learning; and self-regulated learning are key goals emerging from this research. While these perspectives build on earlier approaches to active learning, they are "new" in contrast to traditional models of schooling. Also, it is especially important in our changing and changed society to promote meaningful learning among all students. The vision of meaningful learning developed for a restructured school will determine the curriculum objectives, classroom instruction, assessment, and the social organization of the school.

2. The Thinking Curriculum - If students are to engage in meaningful learning, numerous curricular issues must be addressed. A dual agenda must be implemented focusing both on enriched content and expanded notions of higher order thinking. Otherwise, students will learn isolated skills and facts as ends in themselves. If schools are to become communities of scholars, collaborative learning and the interpersonal skills needed to support it must become part of the curriculum. Activities to develop self-regulated learning and motivation must become part of the curriculum for students of all ages and abilities, but especially for students at risk and younger students. Finally, higher order thinking and reasoning must pervade the curriculum from K-12.

3. The Collaborative Classroom: Reconnecting Teachers and Learners - If there are profound changes implied from the new definition of learning for what students learn, there are equally serious consequences for the roles of teachers in the classroom. Teachers will need to facilitate, mediate, model, guide, assist, share, listen, and adjust the amount of support provided. Moreover, many teachers will need to develop strategies for teaching diverse students within heterogeneous classrooms.

4. Multidimensional Assessment: Strategies for Schools - If the curriculum is to change, the current debate over the usefulness, or uselessness, of standardized tests is likely to be intensified. It makes little sense to redesign curricula to teach for understanding and reflection when the main assessment instruments in schools measure only the assimilation of isolated facts and effective performance of rote skills. Alternative assessment methods must be developed to evaluate and increase the capacity of learners to engage in higher order thinking, to be aware of the learning strategies they use, and to employ multiple intelligences. Alternative modes of assessment are valuable both to students in promoting their development and to teachers in increasing the effectiveness of their instruction.

5. Schools as Learning Communities - In schools that are learning communities, students' learning and teachers' instruction use the community and its resources. In addition, the schools promote learning as a lifelong activity for all citizens. As a result, community members increasingly spend more time in schools to learn, provide support services such as tutoring and teaching, and participate in school life. More and more, schools of the future will be places where administrators and teachers learn and work collaboratively. Schools as learning communities may also mean working with local businesses and agencies to provide increased support services to help students and their families become better learners.

6. Many Roads to Fundamental Reform in Schools: Getting Started - Teachers and administrators who form learning communities reflect as a group on schooling and learning — they probe their assumptions about learning, they debate what they see as essential in the educational experience, and they build consensus on what vision of learning will undergird their school's mission. Initiating a broad-based dialogue comparing learning that should occur to learning that is actually occurring is a first step in getting started. A broad-based dialogue includes community members, parents, teachers, administrators, and students. In furthering the dialogue, participants should pursue the implications of their new definition of learning for all dimensions of schooling — curriculum, instruction, assessment, school organization, and community relations.

7. Many Roads to Fundamental Reform in Schools: Continuing to Grow - If all participants in this school community are successful learners, then they know that the process of learning is ongoing and iterative. They know that schooling and learning are driving concepts that must be repeatedly developed in their meaning. Participants are continually learning and re-learning what the mission of the school is, what the vision of learning should be, how to realize this vision, and the many subtle ways the vision is impeded by organizational and attitudinal constraints. Formative evaluation of the restructuring process becomes "business as usual" for the school.

8. The Meaning of Staff Development in the 21st Century - Traditional roles of staff development for teachers and principals focusing on one-shot events are as outdated as traditional models of learning. Therefore, a major task of the restructuring movement is to align models of staff development with new visions of learning to allow teachers and administrators to plan together sustained, high-quality staff development programs. Video Conference 8 focuses on developing new roles for teachers and administrators based on research on expert teaching and staff development.

9. Reconnecting Students at Risk to the Learning Process - New visions of learning suggest that students who are academically at risk have been largely disconnected from the process of learning by segregation into poorly coordinated and impoverished remedial programs emphasizing drill on isolated skills. Research indicates that such students can be reconnected to the learning process by training regular classroom teachers to use teaching/learning strategies which are successful for students in heterogeneous classrooms and by providing them with dynamic assessments and highly enriched learning environments. Video Conference 9 highlights successful programs.

Computer Forums

Much of the value and excitement of participating in this video series arises from the opportunity to interact with presenters and share in the national dialogue on restructuring. Indeed, this dialogue is a primary goal of this professional development series. Yet, there is only so much time available to engage in such dialogue during each video conference. To participate in the continuing dialogue after each video conference, viewers can access LEARNING LINK, a computer conferencing system.

This system was developed for public television to increase the impact of distance learning. Using this system, members can:

- **Ask presenters questions** for one month after each video conference
- Talk to each other to **share experiences**, help solve problems, learn about resources, and ask for assistance
- Participate in "**discussion groups**" organized around specific topics such as the thinking curriculum
- **Access calendars** for events related to restructuring and teaching for thinking and understanding
- **Access new information** pertinent to the video series such as news items, alerts, and announcements of new publications
- **Search** user's communications for information and commentary on specific topics such as assessment
- **Survey** what others think about a given issue
- **Access large documents** that NCREL enters into the system (e.g., articles and annotated bibliographies)
- **Exchange strategic plans** with others

Who Will Be Available to Address Questions and Comments?

NCREL and PBS have asked the presenters if they, or their staff, can be available for approximately one month after each video conference to answer additional questions. While we do not expect that all of the presenters will be available, we anticipate that there will be some from each conference in the series. A full-time conference moderator will be available from Indiana University at Bloomington. This person will be able to answer questions pertaining to all aspects of restructuring as well as to respond to technical questions and facilitate conference dialogue.

What Do I Need To Use LEARNING LINK?

All you need to apply is a microcomputer (any brand), a modem, and telecommunications software such as Apple Access 2, Apple Works, Procomm, and Red Ryder.

How Much Does LEARNING LINK Cost?

Regular account membership is $189.00 for 20 hours of access to the system. However, **DataAmerica** and **IBM** have partially underwritten the cost. The first 2,500 people to register will pay only $95.00 for 15 hours. Of these special $95.00 memberships, 1,500 will be reserved for persons in the NCREL region. Memberships will be processed first-come, first-served. For information,

phone:

Erica Marks
IntroLink
(212) 560-6868
9:30-5:30 EST

or write:

IntroLink
Learning Link National Consortium
356 W. 58th St.
New York, NY 10019

Note 1: While there may be nominal local connect charges, there will be no additional fees for long distance usage for hours of service purchased. This is true whether you pay $189.00 for 20 hours or $95.00 for 15 hours.

Note 2: Members currently using LEARNING LINK service do not need to apply. They are already eligible to participate in the service for this video series through their local LEARNING LINK system. For information, watch for announcements in your bulletin boards.

Remember: You must already have a microcomputer, a modem, and telecommunications software in order to access LEARNING LINK.

Materials

Video Conference ***Guidebooks*** include pre- and post-conference activities as well as other activities for various workshops. Activities are customized for different levels of knowledge. Some activities are introductory; others are more advanced. Each downlink site will receive one camera-ready master copy free of charge for local reproduction as part of the licensing arrangement.

Selected Readings include reprints of various articles and other information for each video conference. Two volumes will be available for $15.00 each from:

Zaner-Bloser, Inc.
Customer Service
1459 King Avenue
P.O. Box 16764
Columbus, OH 43216-6764

(800) 421-3018
8:00 am - 4:30 pm EST
Fax: (614) 486-5305

Course Credit Information

In the NCREL region (Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin), the National College of Education will offer two graduate hours of credit to:

- Groups of students using an approved on-site facilitator
- Individuals employing instructional services by telephone

For more information about credit in the NCREL region, please call Sonja Clary, Associate Dean for Off-Campus Programs, (708) 475-1100, ext. 2335.

In the fall of 1990, PBS Adult Learning Service will offer *Restructuring to Promote Learning in America's Schools* as a telecourse. For information, please call (800) 257-2578.

Local Involvement

Inside the NCREL Region

NCREL has identified local teams from each of its seven states to assist in implementing the video series. Teams include people in these areas: media, staff development, curriculum and instruction, and rural and urban education. Each team has developed its own implementation plan. Local PBS stations throughout the region will also be a part of the local outreach.

Outside the NCREL Region

You may want to generate activities similar to those in the NCREL region. Some suggestions:

- Your school or agency can provide immediate commentary and analysis at the local site after each video conference.
- Local colleges or universities may use the series as part of course requirements.
- State education agencies and/or other qualified agencies may provide continuing education credits or equivalent for participation in the series.
- Local and state education agencies may provide Leadership/Management Academy Workshops, study groups, and/or other workshops using the video series.
- Your school may provide school credits/career advancement for participation.

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Video Sources

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Presenters' Biographical Information

Matthew Lipman

Matthew Lipman, currently Director of the Institute for the Advancement of Philosophy for Children, is perhaps best noted for *Philosophy for Children*. One of the first programmatic approaches to teaching thinking skills, this well-documented program demonstrates unequivocally the powerful effects of teaching young children to wonder, puzzle, and reason. As part of this program, he invented a new genre of literature for children: novels in which fictional characters such as Lisa and Harry interact to solve problems and reflect on issues and concepts in science, history, and philosophy. He was one of the earliest philosophers to argue that philosophy was an appropriate area of study for children, including very young children. His paper, "Thinking Skills Fostered by Philosophy for Children," written in 1980, was among the first to outline the thinking skills involved in philosophy that related to schooling (see Chipman, Segal, and Glaser, 1985). More recently, he has developed a vision of learning for schools that is both integrally social and also reflective. In this model, children and adults collaborate to develop standards of excellence and to pursue lines of inquiry about such issues as the nature of man and the universe.

Lauren Resnick

Lauren Resnick, Director, Learning Research and Development Center, University of Pittsburgh, has spearheaded research in cognitive psychology in her research in the area of mathematics, generating numerous successful problem-solving strategies, and in her research on education and society. This Center was the first major center for research on learning in the content areas in this country, and Resnick has done pioneer research in each of the content areas. Her accomplishments include being a founding member of the first journal to focus on cognitive psychology and instruction: *Cognition and Instruction*. Later, the Carnegie Foundation commissioned her to review both basic research and commercial programs. This effort culminated in the book, *Education and Learning to Think*, (1987). More recently, as President of the American Educational Research Association in 1988, she gave one of the most influential papers in this decade as her presidential address entitled, "Learning Is School and Out," in which she demonstrated the ways that learning in schools is fundamentally misaligned with the conditions and tasks in meaningful learning outside of schools. Most recently, she edited *Toward the Thinking Curriculum* (1989).

Hubert M. Dyasi

Hubert M. Dyasi, Professor of Science Education and Director of the City College Workshop Center in New York, is an internationally known science educator with approximately 25 years post-doctoral experience in New York, Illinois, Africa, and England. He taught at the University of Sierra Leone for four years before becoming the motivating force behind the Science Education Program for Africa (SEPA) for the ten-year period between 1970 and 1980. As Executive Director/Director of Programs of SEPA during this period, Dr. Dyasi generated several science education development projects in many countries of Africa. He has also published articles that cover environmental activities in Africa in *The Journal of Environmental Education*, three groups of skills essential for science teachers in *The Cambridge Journal of Education*, and integrated science education in African primary schools in Prospects. Dr. Dyasi now serves on the Advisory Board of nationally funded programs such as the National Center on Technology in Education (Bank Street College), Improving Urban Elementary Science Project (Education Development Center), Preschool Science Collaborative of the National Urban League, National Science Resources Center (Smithsonian Institute and the National Academy of Sciences), and the Sci-Tech Center (New Jersey). He has also served on a teacher education program review for the New York State Department of Education.

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